



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,228	12/12/2003	Shin Seung Park	29936/39847	1847
4743	7590	07/22/2005	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 233 S. WACKER DRIVE, SUITE 6300 SEARS TOWER CHICAGO, IL 60606			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,228

Applicant(s)

PARK, SHIN SEUNG

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the over-etching". There is insufficient antecedent basis for this limitation in the claim.

Claims 2-6 are indefinite because they depend on claim 1

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (US 6,656,826) in view of Kantimahanti et al (US 5,747,369)

Ishimaru discloses a method of forming a semiconductor device comprising the steps of :

preparing a semiconductor substrate comprising an underlying element 1 and forming an interlayer insulating film 4 thereon (col 3, lines 5-7; fig. 2A)

forming via contacts to expose element 1 through the insulating film 4 (col 3, lines 4-7), which reads on forming a metal line contact hole to expose a portion of the underlying element, and a metal fuse contact hole to expose a portion of the semiconductor device by etching a portion of the interlayer insulating film

forming a metal line plug area 13 and a metal fuse plug area 12 by filling the metal line contact hole and the metal fuse contact hole with conductive material (col 3, lines 1-5; fig. 2A)

forming a metal layer 9 on the interlayer insulating film including the metal line plug and the metal fuse plug (col 6, lines 15-17)

forming a metal line pattern and a metal fuse pattern 9 electrically connected to the metal line pattern (col 6, lines 33-35; fig. 3A)

selectively etching the metal layer 9 excluding the pad and fuse areas to separate/isolate the pad and fuse areas and performing an ashing step (col 6, lines 38-43), which reads on forming the metal line by electrically isolating the metal line pattern and the metal fuse pattern by means of the over-etching process to the metal fuse.

Unlike the instant claimed inventions as per claims 1, 6, Ishimaru fails to specifically disclose etching and over-etching the metal layer to form a metal pattern and a metal fuse pattern

Kantimahanti discloses a method for forming capacitor comprises the step of etching and over-etching the metal layer 40 to form a metal pattern (col 3, lines 21-52; fig. 6)

One skilled in the art at the time the invention was made would have found it obvious to modify Ishimaru method by etching and over-etching the metal layer to form a metal

Art Unit: 1765

pattern and a metal fuse pattern in view of Kantimahanti teaching because Kantimahanti discloses that a metal layer are patterned by well known photolithographic and etching technique to form a layer of metal wiring/metal pattern (col 3, lines 49-53) and over-etching is required in order to open deeper contact opening (col 3, lines 20-25)

Regarding claim 2, Ishimaru discloses that the metal line pattern is connected to the underlying element through the metal line plug (fig. 3A)

Regarding claim 3, Ishimaru discloses that the metal fuse pattern in the fuse area, is connected to the semiconductor substrate through the metal fuse plug (fig. 3A)

Regarding claim 4, fig. 3A of Ishimaru shows that a space between the metal line pattern and the metal fuse pattern is set to have a width such that the metal layer remains to a constant thickness in the space, even after carrying out the ashing/over-etching process of forming the metal line.

Regarding claim 5, fig. 3A of Ishimaru shows that the metal fuse pattern 12 comprises a plurality of condensed patterns, and spaces between the condensed patterns are set to have widths such that the metal layer has a constant thickness

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

Art Unit: 1765

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV

July 20, 2005